Space Weather Forecast

Issued on Tuesday, 14 June 2022 at 01:07 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate-class X-ray flares. Chance of G1/Minor Storms mainly Day 2 (15 June).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was Moderate in the last 24 hours, with a long duration Moderate-class flare that peaked around 13/0400 UTC, originating from the northeast quadrant. There are now nine sunspot regions on the visible disc, the largest and most complex of which is the region responsible for the recent flare. A large Coronal Mass Ejection (CME) was observed in association with this flare. While the bulk of the ejecta is expected to miss the Earth, the results suggest a possible glancing blow in the early hours of the 15th.

Solar Wind / Geomagnetic Activity: The solar wind speed showed an ongoing coronal hole fast wind. Wind speeds were mostly between 500-550 km/s, before declining slightly to 450 km/s at the end of the period. Total Interplanetary magnetic field strength has been moderate but on a slight declining trend, with the north-south component varying moderately. Geomagnetic activity was Quiet to Unsettled, with a G1/Minor Storm interval between 13/0300-0600 UTC.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background with no solar radiation storms detected.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be occasionally Moderate through this period, with Common-class flares and a chance of Moderate-class flares.

Solar Wind / Geomagnetic Activity: A large CME was observed leaving the sun in the early hours of the 13th, in association with a long duration M3 flare. Its analysis revealed that while the bulk of the ejecta is expected to miss behind Earth's orbit, there is chance of a glancing blow early on the 15th +/- 9 hours. Solar wind speeds are expected to remain at slightly elevated levels on Day 1, under the waning influence of a coronal hole. They should then become elevated or perhaps strong on Days 2 and 3 (15th and 16th) under the influence of the CME, followed by the high speed stream originating from a large coronal hole. Solar winds slowly easing on Day 4. Geomagnetic activity is expected to be mainly Quiet on Day 1 but mostly Active with a chance of a G2/Moderate Storm on Day 2, Unsettled to Active of Day 3 and mostly Quiet on Day 4.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to remain at background with no solar radiation storms.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	Yes	5	30	10	1
Strong	G3	No	1	5	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	30	35	40	40
Very Active	R3 to R5 X	No	5	5	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	2	2	2	2
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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